15¢

May 19, 1951

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Dangerous Beauty

A SCIENCE SERVICE PUBLICATION

ASTRONOMY

Faint Double Star Is Triple

Find seventh magnitude star in constellation of the Big Bear is really a triple star. As single light point, it can be spotted with binoculars.

➤ A FAINT STAR in the Big Bear, known for over a century to be double, has been found to be three stars by Dr. R. M. Petrie of the Dominion Astrophysical Observatory, Victoria, B. C.

Of the seventh magnitude, star H. D. 100018 can be spotted with a pair of binoculars. In these early spring evenings, it is high in the north above the bowl of the Big Dipper. If you use a powerful telescope, you can probably see two stars very close together, although in reality they are about 500 million miles apart.

The third, faint companion of this pair you can not see, even with the powerful telescope. Astronomers now know of its existence, but it has never been seen. The blinding light of its companions keeps us from spotting it.

Dr. Petrie found that there were three stars involved in this stellar team by fanning out the star's light into its rainbow colors. Sometimes the spectral lines are single, sometimes double and occasionally they appear triple.

The stars of the close pair are both believed to be somewhat brighter and hotter than our sun. When they are crossing our line of sight and their velocities are the same as that of the distant companion, all three spectra are superposed and single lines are produced. But when one star of the close pair is approaching us, the other receding from us with their maximum speed and the third is seen in the background, then astronomers see triple lines in the star's fanned-out light.

Discovery of the third member of this star team occurred when Dr. Petrie luckily was studying it just at the time the two close stars were favorably situated.

Some 25 years ago this star was discovered to have not single but double spectral lines by Drs. Walter S. Adams, Alfred H. Joy and R. F. Sanford of Mount Wilson Observatory. At the time of their study apparently the spectral lines of one star of the close pair were not separated from those of its distant companion. Thus several decades passed before Dr. Petrie photographed the star's fanned-out light at the very time when all three were visible and could be separated with a powerful spectrograph.

These stars are roughly 1,500 million miles away. In 1925 the two visible stars appeared as far apart as they will ever get as seen from the earth. They are now closer together and in 1968 will reach their minimum separation.

The brighter of the two stars which you would see with a telescope is the double one, composed of one star about as bright as its distant companion and another only about half as luminous. The close pair are some ten million miles apart and they revolve around each other in about a week, Dr. Petrie calculates. These two together circle around their distant companion every 84 years or so.

"Here at the Observatory, the star always appears as a single object upon the slit-head of the spectrograph," Dr. Petrie states, "so the light of all three stars is always recorded in the spectrogram. The simultaneous appearance of three sets of spectral lines, together with the determined elements of the visual orbit will, in time, allow us to derive accurate values of the masses and dimensions of the stars and the sizes of the orbits."

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METEOROLOGY

Rainmakers' Showers Local

➤ RAINMAKING IS only a matter of few local showers at best, the Council of the American Meteorological Association, speaking for the nation's professional weathermen, said at a meeting in Washington, D. C.

In its first official statement on the controvesial subject, the council unanimously declared that, "under certain conditions, weather modification, on a relatively small scale, such as the production of local showers, protection from frost and the local dissipation of fog is known to be possible."

However, the meteorologists' top body pointed out, weather conditions most favorable for even this small-scale rainmaking are very much the same as those favorable for natural rain or snow. Therefore, they said, no one can tell whether or not a single seeding experiment was successful. It might have rained anyway.

"There is very little evidence and no present scientific basis for the belief," the council continued, "that we now possess the ability to modify or control the weather and climate of a major portion of the country."

Nobel prize-winner Dr. Irving Langmuir, chief proponent of rainmaking, has claimed that cloud-seeding in New Mexico produced rain east of the Mississippi.

The statement of the meteorological council was based on a report submitted by a committee consisting of Dr. Henry G. Houghton, professor of meteorology at Massachusetts Institute of Technology, chairman, Dr. Sverre Petterssen, director of scientific services of the Air Force's Air Weather Service, and Dr. Henry T. Harrison, Jr., chief weatherman of United Air Lines. Dr. Harrison was not present at the meeting having been detained by business in Denver.

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GENERAL SCIENCE

Science of Human Behavior Needed to Stop Dictators

➤ SCIENTIFIC KNOWLEDGE of human nature must be merged with a philosophic view of political and social ideals unless man is to succumb to skepticism or authoritarianism, Dr. Francis W. Gramlich, head of Dartmouth College philosophy department, told the American Psychiatric Association meeting in Cincinnati.

Liberty is not merely a word, Dr. Gramlich told the psychiatrists. It is a valid ideal based on developmental processes which lead to realistic thinking and self-control.

Democratic ideals, he asserted, are justified as legitimate expression of the human ideal of perfection.

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BOTANY

Dogwood Blight Over Eight States, Spreading North

➤ FLOWERING DOGWOOD may be doomed by disease, a blighting fungus that is slowly spreading northward. For the first time this year it has been found on the "blooms" of pink dogwood in Maryland. Previously the fungus had attacked only white dogwood in that state.

In many places, for the disease has now spread over eight states, the attack has been so severe that infected trees can be spotted driving along a street or roadway. Leaves are ragged and splotched, sometimes have turned a sickly gray color. The "blooms" are dotted with small brown spots.

Spot anthracnose disease is causing the dogwood's destruction, so far limited to areas south of Baltimore. Dr. Anna E. Jenkins of the Department of Agriculture and Dr. R. A. Jehle of the University of Maryland suggest that the disease may be spread by humans who cut the infected branches and carry them to new locations.

The blooms of dogwood are really not blossoms, but are sort of modified leaves, technically known as bracts.

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NUTRITION

Submariners Eat Better

Three-month cruise shows less food storage space needed and less garbage results from use of "submarine provision load" that includes spicy foods.

➤ SUBMARINERS CAN now eat better. What is more, the food they eat takes 25% less space in the submarine and the garbage from it is 65% less.

This was proved in a three month cruise last fall of two submarines, one carrying food according to old specifications, the other carrying food scientifically designed as a "submarine provision load" by the Commissary Research Division of the Navy's Supply Research and Development Facility, Bayonne, N. J.

Chief improvement in the diet, from the submariner's point of view, was that it included pastries, cakes, sweet rolls and breads. From the Navy's point of view, the 25% saving in space means that submarines do not have to cut short cruises to stock up on more food. And the 65% cut down on garbage is much more important than a landlubber would think. During combat, it might mean death to discharge garbage either on the surface or underwater. It provides a telltale clue to the position of the submarine.

Frozen pre-cooked meats already cut, called "pre-fabricated" by the Navy, frozen vegetables and fruits, ready mixed bread, cake and pastry ingredients and various other space- and time-saving methods do the trick for the Navy.

The experimental cruise was reported to the meeting in Washington of the Associates, Food and Container Institute, consisting of representatives of industry which have cooperated with the Armed Forces in solving their food problems. Lieut. Comdr. J. A. Corrick, officer in charge of the Commissary Research Division, spoke on the Navy's food problems at the meeting.

Despite the success of the new "submarine provision load," the very first report on the experimental cruise was pessimistic. This report was given by the head civilian food specialist of the division, Lendal Kotschevar, who went on the cruise to try out the diet he had much to do with devising.

As he came ashore at New London, Conn., after having been on the submarine for three months, it was his opinion that the diet was a failure. He was tired of all the food on the submarine. However, it soon became apparent to him that this was merely a psychological reaction to three months on a submarine.

Another indication of the psychological problem involved was the unforeseen success of a pre-cooked frozen dish carried on the submarine—chicken cacciatore. As the cruise lengthened, the men demanded more and more food that was highly spiced, much more highly spiced than they would eat ashore. Chicken cacciatore satisfied this craving.

As technology has lengthened the time submarines—and other Navy vessels too—can stay at sea, it has increased the Navy's commissary problems. Even on battleships and carriers, space is a problem, and the lessons learned from research which culminated in this submarine cruise will be applied throughout the Navy.

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PSYCHIATRY

Vitamin C Makes Antabuse Alcoholism Treatment Safe

➤ VITAMIN C makes antabuse treatment of alcoholism safer and easier to carry out, Drs. Wiktor W. Nowinski and Grady Niblo of the University of Texas Medical Branch at Galveston reported to the American Psychiatric Association meeting in Cincinnati.

Antabuse is a drug which Danish scientists found would make alcoholics want to stop drinking after the first drink because of the unpleasant, even frightening feeling it produces when taken before drinking alcohol. It is being tried in a number of centers in this country now.

Vitamin C, the Texas doctors reported, does not lessen the effectiveness of antabuse but lessens many of the undesirable effects that have nothing to do with its anti-alcoholic action.

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PHYSICS

Earth Gets More Magnetic During Last Two Decades

➤ THE EARTH is getting more magnetic. That is the conclusion put forth by Dr. C. Gaibar Puertas of the Universidad de Barcelona, Spain.

He told the American Geophysical Union meeting in Washington, D. C., that earth's magnetism has shown a "notable increase" in the last 20 years. Other studies made up to this time have usually led to the conclusion that during the last 100 years the magnetic attraction of our planet is decreasing at the rate of one fifteen-hundredth of the total per year.

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LIGHT TESTER—This 75-foot chamber acts as a camera and focuses light upon the test stand at the far end where a General Electric Company engineer is adjusting a light intensity meter. The circular curtains or flanges keep the light from being reflected in the darkened chamber of the laboratory.

PSYCHIATRY

Wounded Show Mental Ills

➤ MANY OF the marines and soldiers wounded in Korea have been showing symptoms of mental disturbance. Sometimes these were so severe that the men had to be transferred to psychiatric wards, three Army and Navy psychiatrists reported to the American Psychiatric Association meeting in Cincinnati.

The irritability, restlessness, depression and pain shown by these wounded seriously complicated their treatment and convalescence.

Interviews with about 90 of the men showed that there were four chief factors causing these symptoms of mental disturbances: 1. emotional and family problems of long standing that had been activated by the anxieties of combat; 2. prolonged symptoms of anxiety, restlessness, startle reaction and battle dreams directly related to combat; 3. disturbances due to the nature of the wounds themselves, some of which involved losing arms or legs, and to the problems of future adaptation: 4. reaction to the prolonged, painful and monotonous nature of the operations and treatment which in some cases would extend to two years.

These patients were very much improved, both mentally and physically, when the psychiatrist and orthopedic surgeon worked together in the surgical wards, instead of having the patient sent to the psychiatric clinic or ward.

Alertness to the problems of these patients now, the three doctors stated, will reduce the possibility of later mental breakdowns. The doctors reporting were: Dr. Douglas Noble, consultant at the National Naval Medical Center, Bethesda, Md., Capt. Douglas B. Price, U. S. Army, and Comdr. Marion E. Roudebush.

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MEDICINE

Cancer in Men Increases

➤ CANCER IS on the increase, especially among men. This is the case for the metropolitan area of Atlanta, Ga., first area where a National Cancer Institute survey has been completed.

Surveys in New Orleans, Birmingham, Dallas, San Francisco, Denver, Chicago, Detroit, Pittsburgh and Philadelphia have been made and the statistical reports are now being prepared.

By the end of this year the U. S. Public Health Service and its National Cancer Institute hope to know whether the disease is increasing or decreasing throughout the nation. Present statistics on how many people have cancer, the basis for most cancer control and research activities, were compiled during the two-year period, 1937 to 1939. The new survey figures cover the years 1947 and 1948.

In the Atlanta area the rate at which cancer attacks has increased from 313 per 100,000 population in 1937 to 340 per 100,000 in 1947. The relative increase was much larger among males than females, from 176 to 212 per 100,000 (21%) among males, but from 250 to 259 (4%) among females. The death rate increased from 73 to 99 per 100,000.

The increasing age of the population throughout the nation and improved case finding and reporting by physicians and others are credited with the increase.

Questions also to be answered by the surveys, Surgeon General Leonard A. Scheele of Public Health Service said, are: Is lung cancer on the increase? Are certain areas of the country "heavier" cancer areas than others? What age groups are most likely to develop certain types of cancer?

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CHEMISTRY

Crystals Cage Inert Gases

Argon, krypton and xenon, incapable of forming true chemical compounds, have been caged up into stable solid crystalline substances.

➤ A REVOLUTIONARY process in which the inert gases argon, krypton and xenon, called inert because they are incapable of forming true chemical compounds, have been caged up to form stable solid crystalline substances was described and demonstrated to the Royal Institution in London by H. M. Powell, Oxford University chemical crystallographer.

The cage in which the aloof and volatile molecules of the inert gases are trapped is made up of ordinary quinol, a photographic developing material, also known as hydroquinone. The trapping is done by exposing the gas under moderate pressure to a saturated quinol solution and cooling the system to cause the quinol to crystallize out.

The crystals which form under these conditions are stable substances made up of three parts quinol to one of the inert element.

The crystals so formed contain about 70 times their own volume of gas, so that the gas is effectively contained under a pressure of 70 atmospheres, yet the crystals are very stable to ordinary handling. If, however, the crystals are destroyed by dissolving or melting them, then the freed gas escapes quickly.

The explanation for this phenomenon is, according to Mr. Powell, that the crystallizing quinol molecules form a honeycomb of minute cells, or cages, which are just the right size to hold the gas molecules, whose size is of the order of 4 Angstrom units.

Other molecules of similar size—e.g. sulfur dioxide, hydrogen sulfide, hydrochloric acid, hydrobromic acid, hydrocyanic acid, carbon dioxide, formic acid, methyl alcohol, methyl cyanide, and acetylene—can also be trapped to form stable crystalline compounds with quinol.

The name given to these unorthodox crystalline substances is "clathrate compounds," from the Welsh word "clathratus," meaning closed or protected by crossbars of a trellis. The sole determining factor in the formation of clathrate compounds is proper molecular size. Molecules which are too large just won't fit into the cages; those which are too small escape through the lattice-work walls.

Other examples of clathrate compounds are those formed between a nickel cyanide ammonia complex, $Ni(CN)_2NH_3$, and one molecule of benzene, thiophene, furane, pyrrole, aniline or phenol, all molecules of a similar size.

Since clathrate compound formation is based on molecule size rather than on chemical similarity, it can be used practically in the separation of chemically similar but physically different molecules.

For example, in one simple operation benzene can be separated from other contaminating hydrocarbons and produced in 99.992% purity by forming the clathrate compound with nickel cyanide ammonia and then releasing the caged benzene by dissolving the crystals.

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PSYCHIATRY

Normal People Get Mental Symptoms When Given Drug

➤ A DRUG that can make normal people have symptoms like those of severe mental sickness, including hallucinations, suspiciousness and feelings of unreality, was reported to the American Psychiatric Association meeting in Cincinnati.

The symptoms are temporary in the normal persons, almost always disappearing within a day. But they make a normal person feel and act enough like a victim of mental sickness to give doctors a chance to learn more about the nature and causes of mental sickness.

The drug is derived from ergot, the fungus that grows on rye and other grains. Its name is d-Lysergic acid diethylamid tartrate. It was developed at Sandoz Chemical, Inc., in Basel, Switzerland. The experiments with it are reported by Drs. Max Rinkel, Robert W. Hyde and H. Jackson DeShon of the Boston Psychopathic Hospital.

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MILITARY SCIENCE

Flying Printing Press Aids Psychological Warfare

➤ NEW AID to psychological warfare is a "flying printing press". It consists of an 8,000-pound package containing an offset printing press with all tools, supplies and necessary equipment. It was developed for the Armed Forces by the Harris-Seybold Company of Cleveland and Dayton, Ohio. It makes possible on-the-spot reproduction of aerial charts, maps and reconnaissance photographs and leaflets for psychological warfare. Because timing is important in use of these, the flying press is expected to furnish the needed speed in preparation.

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AIRPLANE PRINTING—Freshly printed aerial photo map is examined by Capt. C. R. Rauscher, project officer for Air Force test runs. Time from removal of tarpaulin to delivery of the first printed sheet was 48 minutes.

PSYCHIATRY

Inhalation Treatment Aids

➤ INHALING CARBON dioxide, the soda water gas, offers new hope for mentally sick persons suffering depressions and other of the diseases doctors label neuroses.

"Marked improvement in the vast majority of cases" given this relatively new treatment was reported by Drs. Abraham I. Jackman and C. A. Shorr of the Veterans Administration Regional office, Chicago, at the meeting of the American Psychiatric Association in Cincinnati.

Their report covered a critical evaluation of the treatment from the viewpoint of effectiveness, safety, long-term results and dynamics of action on the brain.

There is no choking or lack of oxygen with this treatment, they emphasized. They found it one of the safest ever given as a chemical treatment for a mental disease.

The patients inhale the gas mixed with oxygen. After 15 or 20 inhalations they fall quietly into a deep sleep. When they awake they feel more relaxed and comfortable and are able to face their problems, talk them over with the psychiatrist and thus win their way back to mental health.

The results last for several years at least. There is no damage to the intellect or to the basic "normal" emotional makeup of the patient.

The treatment is primarily an office treatment and is extremely practical, the Chicago psychiatrists find.

"With the large number of people now besieging psychiatric centers and psychiatrists," they stated, "it appears to be the answer to the load problem as well as to what to do for a tremendous number of psychiatric patients that other forms of therapy have not been able to help, in spite of prolonged efforts."

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PHYSICS

A-Bombs May Fog Films

➤ FUTURE A-BOMB tests such as those last winter in Nevada may interfere with the packing of photographic films and with scientific experiments with radioactive elements. Film companies took precautions at the time of the Nevada explosions to make sure their film did not become fogged up from radioactive materials blown by the winds from Nevada and carried from the sky by snow storms.

Radioactive snow fell all over the East during the period of and immediately after the western A-bomb tests. W. Wayne Meinke of the University of Michigan, Ann Arbor, made chemical analyses of the snow which fell there and found radioactive isotopes. These, he said, "undoubtedly originated in the Las Vegas atomic test explosions."

Mr. Meinke stated in the journal, SCIENCE (May 11), that, "although activities reported in Ann Arbor in no way approach dangerous levels from a health standpoint, they could possibly become the source of contamination problems in such work as film packaging or low background radioactivity experiments."

Mr. Meinke established the presence in the snow of radioactive rare earth isotopes, barium and/or strontium isotopes and showed the possible presence of iodine isotopes. These isotopes were manufactured when the A-bombs exploded and were the result of the breaking up, or fission, of the uranium or plutonium atoms from which the bombs were made.

The tiny particles, flung into the air by the explosions, were carried, perhaps, halfway around the world to Russia, by the prevailing west to east wind currents. Russian scientists undoubtedly made experiments similar to Mr. Meinke's in order to find out as much as possible about the A-bomb tests.

The Atomic Energy Commission offices in Washington and New York said they had received no complaints from either scientists conducting the radioactivity experiments or film companies about trouble during the test explosions. However, they did know that major film companies had taken precautions against film fogging.

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ASTRONOMY

Comet Twice Lost Now Found Again

➤ THE RECENTLY discovered comet heading toward the "Big Bear" in the sky is probably identical with a comet that has been spotted twice before, then twice lost. It has returned five years ahead of its scheduled reappearance, and the villain causing its unexpectedly early bow is the planet Jupiter.

Astronomers Joseph Brady and Nevin Sherman of the University of California at Berkeley have figured out the path, or orbit, of the comet, Harvard College Observatory in Cambridge, Mass., announced. As clearing house for astronomical news for the Western Hemisphere, the Observatory reported discovery of the comet by Dr. L. Kresak at the Skalnate Pleso Observatory in eastern Czechoslovakia on April 24.

The magnitude 10 object, too faint to be seen with the unaided eye, will probably, therefore, have three names, one for each of its discoverers: Giacobini 1907 III, Tuttle 1858 III, and Kresak 1951 F.

Giacobini's comet was believed to have an orbit that would bring it back into view every 49 years, making the next scheduled reappearance in 1956. If its path took it near enough to Jupiter, that planet's mass could cause the change in its appearance time.

The comet is now heading towards the constellation of Leo Minor, the Smaller Lion. It will hit the edge of Ursa Major, the Great Bear, of which the Big Dipper forms a part, then go on to Coma Berenices, Berenice's Hair.

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DENTISTRY

Fluoridate Your Water, Fluoridize Your Teeth

➤ YOUR TOWN may fluoridate the drinking water, but your dentist will fluoridize your children's teeth. Object of both procedures is to help prevent tooth decay.

To be up-to-date and correct, you, the dentist and the town fathers will use the terms that way: fluoridation for the water supply, fluoridization for the treatment procedure when the dentist puts a fluoride on the children's teeth.

These usages of the words are now official for the American Dental Association. They were chosen in accordance with an opinion by the association's research consultant, Dr. George B. Denton.

Fluoridize and fluoridization are new words coined by dentists using this decay-preventing treatment. To help remember this one, Dr. Denton points out that it is in line with such familiar words as sterilize and simonize.

Fluoridate and fluoridation are in line with words like ammoniate, meaning the addition of ammonia to something.

Fluorinate and fluorination, formerly used, are ruled incorrect by Dr. Denton and the dental association because they would mean that fluorine is used. Actually what is used is a salt of fluorine, called a fluoride.

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INVENTION

Method for Seamless Floor Carpeting Patented

➤ APPARENTLY SEAMLESS pile floor carpeting is made from parallel strips of ordinary widths by the use of an adhesive tape placed under the unsewn edges of the strips. In accordance with the invention, strips of pile fabric suitably treated to prevent raveling of the backing are joined together along matched edges by the adhesive tape. A latex adhesive is used. Patent 2,552,114 was awarded to Walter J. Reinhard, New York City, for this so-called carpet joining device and method.

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● RADIO

Saturday, May 26, 1951, 3:15-3:30 p.m. EDT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Henry Field, Washington anthropologist who led the Peabody Museum-Harvard Expedition to the Near East last year, will discuss "The Search for Stone Age Cultures."

PSYCHIATRY

Now Tape Recorder Will "Count Your Sheep"

➤ A NEW kind of sheep counting to induce sleep, done by a tape recorder over a loudspeaker instead of by the sleepless person, was reported at the meeting of the American Psychiatric Association in Cincinnati.

Simple phrases are repeated over and over in a monotone. The phrases are chosen to induce sleep by suggestion, something like that used in hypnotism. The loudspeakers are in the wards of the hospital, while the recorder is in the nurse's office.

Within two to four weeks most patients reported gratifying results, Dr. Ernest Schmidhofer of Kennedy Hospital, Memphis, stated. Some were able to take daytime naps for the first time in their lives. Sleep became more quiet and refreshing. Patients dreamed less and had pleasant dreams instead of nightmares. Almost none except newly admitted patients asked for sleeping medicine.

The method can be used, Dr. Schmidhofer said, to give the benefits of restful sleep and relaxation to patients with all kinds of mental sickness, psychosomatic illness and pain of various kinds and duration.

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BOTANY

World's Tiniest Plant in Its Class Is Leafless Parasite

➤ THE TINIEST plant of its class in the world is now yielding up its life's secrets to scientists. It is a leafless parasite, a distant relative of mistletoe, and its small size is indicated by its name—*Arceuthobium minutissimum* Hook.f.

Found only in the high Himalayas, the plant often is less than a fifth of an inch in length. Its flowers are greenish in color. Scientists cannot yet tell whether the same individual is normally both male and female, as in most flowering plants. They will have to wait until the seeds are allowed to germinate on fresh and previously unattacked pine stems.

Dr. R. M. Datta of Jute Agricultural Research Institute, West Bengal, India, is investigating the characteristics of the tiny plant. He reported his observations in the journal, NATURE (Feb. 3).

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MEDICINE

Cortisone Hits Toxemia

Expectant mothers with dangerous toxemia helped by famous anti-arthritis remedy, results from treatment of eight pregnant women show.

➤ EXPECTANT MOTHERS who develop dangerous toxemia of pregnancy may be helped by the famous anti-arthritis remedy, cortisone, it appears from a report to the British Medical Association in London.

"It appears to be a help in the treatment," is the cautious wording of the doctors who tried it in eight cases at the National Maternity Hospital in Dublin.

All the patients were seriously ill, with high blood pressure, headaches and disturbed kidney function. Some had had convulsions. In all cases the patients improved considerably within a few days after the treatment was started.

Headache was relieved, the women no longer needed sedatives except occasionally at night. They felt better, ate better, their eyes improved. Dropsy swellings of ankles, feet, and the like were reduced, though some later developed dropsy of the abdomen, medically termed ascites. Kidney function improved, but blood pressure was not significantly affected.

Of the eight patients, one subsequently died of congestive heart failure. One developed the mental illness, schizophrenia, but had shown signs suggestive of this previously.

All but one of the mothers gave birth to live babies. In three cases, cortisone enabled the mothers to carry their babies enough longer so that the babies were born alive, though they were premature.

Important advantage of the cortisone treatment was that the mothers did not need so much sedative medicine to control their restlessness and reduce the risk of convulsions. Use of sedatives for this purpose, though otherwise necessary, carries a definite risk to the baby.

Doctors reporting the cases are: Henry Moore, W. J. E. Jessop, D. K. O'Donovan, A. P. Barry, Brigid Quinn and M. I. Drury. Details of the cases appear in the BRITISH MEDICAL JOURNAL (April 21).

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OCEANOGRAPHY

Suggest Pink Icebergs

See Front Cover

➤ PINK ICEBERGS or orange icebergs, maybe even red or yellow bergs, will dot the North Atlantic if the suggestion of Dr. Irving I. Schell of the Woods Hole Oceanographic Institution, Woods Hole, Mass., is followed.

He told the American Geophysical Union meeting that spraying icebergs with color dust would make them much easier to spot and track, and would simplify counting them. Better prediction of the iceberg menace could probably be made if the number of icebergs and their movements in the Baffin Bay and Davis Strait areas were known more accurately.

The practical application of this plan was considered difficult by some of the scientists listening to Dr. Schell's proposal.

The iceberg pictured on the cover of this week's SCIENCE NEWS LETTER is one of the most unusual in shape and size sighted by the U. S. Coast Guard on International Ice Patrol duty.

Valuable information as to the circulation of water in the Baffin Bay and Davis Strait areas could also be gained from tracking the distinctively colored bergs, Dr. Schell said. Estimates could be made as to their course of travel, average speed and how long and how far they travel before disappearing.

Most icebergs break off from the great glaciers of Western Greenland, slowly travel in the Labrador current to where it meets the Gulf Stream—fog-bound, offshore Newfoundland. Dr. Schell's idea is to mark them by color before they break off from the different glaciers. During the berg danger season, from April to July of each year, shipping of all nations, by international agreement, swings south from the northern, most direct great circle route to Europe.

Science News Letter, May 19, 1951

PHYSICS

Brookhaven Reactor's Face Unveiled to Public View

➤ THE NEW nuclear reactor, hot with fissioning atoms, at Brookhaven National Laboratory, Upton, L. I., can now be looked in the face without the viewer undergoing FBI clearance for character, associations and loyalty.

Most of the area around this new research tool is still highly classified, but scientists not cleared for secret work can conduct experiments with neutrons from the pile in the newly declassified area.

Science News Letter, May 19, 1951

TECHNOLOGY

English School Teaches Use of Radioactive Materials

➤ THE HANDLING and use of radioactive materials in medicine and the industries is the subject of instruction of an atomic energy school just established at Harwell, England. This site was selected because it is adjacent to the government's Atomic Energy Research Establishment from which radioactive isotopes can be obtained and because of the nearness of research scientists of the Establishment who can give instruction.

This school, in six-week courses, is designed to meet the requirements of medical and industrial workers who need to learn what can be done with radio-isotopes, and what apparatus and and methods are necessary to deal with radioactive materials. Proper handling methods are also included.

Along with the courses in handling and using radiocative materials is a course giving a broad outline of the principles of nuclear physics, the principles of the electronic circuits used in measurements, and the hazards and biological effects of radioactive materials.

Science News Letter, May 19, 1951

TECHNOLOGY

Suits Come Through Rain Without Losing Crease

➤ SUITS THAT come through a rain without losing their crease and slacks that can be home-laundered and yet hold their press are promised for the future by textile advances.

Dr. Louis L. Larson of Du Pont told the American Association of Textile Technologists meeting in New York that the new polyester fiber, christened Dacron (formerly Fiber V), is most likely to be used in suits. Men's outer wear may be revolutionized in the same way that nylon has invaded stockings and men's shirts.

Large scale production of the new fiber is scheduled for 1953. Twenty men have worn experimental Dacron suits in a test, reporting that they were unworried by wrinkles in damp or rainy weather.

Science News Letter, May 19, 1951

MEDICINE

Iodine-Less Thyroid Hormone Is Tested

➤ A NEW view of the importance of iodine in the action of the thyroid gland hormone was suggested by studies reported by Drs. Fritz Lipmann and Charles H. DuToit of Massachusetts General Hospital, Boston, at the meeting of the National Academy of Sciences in Washington D. C.

The specific action of the hormone on metabolism and various body functions may depend on another property of the hormone molecule rather than on its iodine content, these scientists reported.

The gland's need for iodine to make its hormone has been the reason iodine is added to drinking water or table salt in regions where it is lacking in the water supply.

Drs. Lipmann and DuToit tested a compound similar to thyroxin, the thyroid hormone, except that where the gland product has iodine in its molecule, this other compound has nitrogen-containing groups. This compound, called tetranitro thyronine, was made by the Glaxo Laboratories, Ltd., in England.

It was tested on rats that had their thyroid glands removed. The animals stopped growing, had a low metabolic rate and such other signs of thyroid lack as scaliness of the tail, caked eyes and a rough fur.

When they were given tetranitro thyronine, their metabolic rate rose to normal levels, they started growing again and other signs of thyroid lack receded. One rat even showed a temporary state of pop-eyes like that seen in humans with the kind of goiter due to too much thyroid hormone from overactive thyroid glands.

"Activity of the nitro compound," the scientists stated, "suggests that the specific action of the hormone may depend on a strong negativity of the substituents on the phenolic ring system, rather than on their specific halogen nature."

Science News Letter, May 19, 1951

GENERAL SCIENCE

Petroleum Production in Mexico Will Aid America

➤ DISCOVERY of a rich new oil field in southeastern Mexico, revealed by Senator Antonio J. Bermudez of Mexico City, head of the Mexican government petroleum administration, gives Mexico a forward boost, important to America, in a 50-year-old oil industry in which it already is playing an important part.

A test well in the new field yielded 146 barrels of high quality crude oil in two hours, he said. This means a daily initial capacity of 1,750 barrels. It is important news for the United States because it means more oil available for export if a world-wide emergency interferes with importation to America from the Arabian area or from Venezuela.

Important also to the United States is the fact that Mexican oil production from old fields and other newly discovered fields has greatly increased during the past five years. The aim of the Mexican president is to reach maximum development of the Mexican petroleum industry as soon as possible, according to a recent report by the senator, the objective being national defense. Crude oil production in 1950 was up to 73,800,000 barrels, as against some 62,097,000 in 1949, he stated.

Science News Letter, May 19, 1951

IN SCIENCE

GENERAL SCIENCE

Magnesium Alloys Safe For Electric Appliance Use

➤ MAGNESIUM ALLOYS are safe materials to use in the housing of portable electric appliances under ordinary conditions, according to a report just issued by Underwriters' Laboratories, Inc., of the National Board of Fire Underwriters in New York.

Danger from fire by their use is very small if the alloy is at least .08-inch in thickness, 125-volt current of 30 amperes or less is used, and the appliance circuits are limited to 60-cycle alternating current operation. Ordinary household appliances are within these limits.

The study was made by the organization at the request of the Magnesium Association and because of the idea on the part of some that magnesium is highly combustible. Magnesium and its alloys are not of a fast-burning nature, except in the form of powder, turnings, shavings or thin sheets, the report states. When thin sections of magnesium or its alloys are ignited, the burning is not readily extinguished because of high chemical affinity for oxygen at elevated temperatures.

Further investigations are to be made concerning any possible fire hazards from magnesium or its alloys in other applications. For portable appliances, under the conditions stated, enclosures of magnesium-base alloys are judged to have sufficient resistance to self-sustained ignition to justify their use.

Science News Letter, May 19, 1951

INVENTION

Patent Automatic Airplane Altitude Control System

➤ AIRPLANES IN flight will automatically maintain a desired altitude by means of an altitude control system which brought Alan M. MacCallum, Maywood, and Norman B. Murphy, West Englewood, N. J., patent 2,552,196. Bendix Aviation Corporation, Teterboro, N. J., has acquired the patent rights.

Automatic steering systems now in use on many planes maintain level flight in the air under ordinary conditions except when encountering rising or descending air currents. This novel electric altitude control unit, a device supplementary to an automatic steering system, will keep the craft at the desired altitude after it has been attained notwithstanding rising or descending air currents, or changes in the loading of the plane.

Science News Letter, May 19, 1951

ENCE FIELDS

PSYCHIATRY

Grief in Old Folks Causes Physical Ills

➤ OLD PEOPLE are likely to show their grief for a lost loved one not in tears but in physical sickness, psychiatrists at an oldsters' guidance clinic find.

The illness may be the way the old people "work out" feelings of guilt toward the deceased, since they have such feelings very rarely compared to younger persons.

The oldster will also idealize the deceased person to an almost fantastic degree. While there is a tendency for people at all ages to remember a loved person who has died as much more wonderful than the deceased was considered in life, this idealization in bereaved older persons may reach quite abnormal proportions.

These findings were reported to the American Psychiatric Association meeting in Cincinnati by Drs. Karl Stern and Miguel Prados and Miss Gwendolyn M. Williams of Montreal, Canada. Their studies were made at the Old Age Counselling Service, oldsters' equivalent to a child guidance clinic, which McGill University has run for the past six years.

Science News Letter, May 19, 1951

TECHNOLOGY

Vapor From Crystals Inside Paper Protects Metals

➤ LONG-TIME PROTECTION for metal objects from rust and other corrosion is promised with a simple packaging method that uses a vapor from new chemical crystals placed on the inside of wrapping paper to prevent the destructive reactions.

The chemical is a product of the Shell Oil Company, New York, and is technically called "volatile corrosion inhibitor." Its chemical composition is not yet revealed. It is a powdery substance that releases a thin vapor which, inside the wrapper, forms an invisible protective shield around the metal.

In use, paper wrapping, coated with the chemical crystals, is put around the object to be protected and sealed. The vapor begins to form and completely surrounds the metal, penetrating to the smallest parts with its protective film to insure complete protection. The vapor gets into the most inaccessible parts.

This volatile corrosion inhibitor may some day be used by the military services to protect war equipment from rust and corrosion when not in use. Tests are now being made by the Army Ordnance Research and Development Division.

If found successful after sufficient experimental trials, it would do away with the present method of coating such equipment as guns with heavy grease, which gives little protection to inaccessible parts and is always hard to clean off when the equipment is needed for use again.

The experiments now being conducted by Army Ordnance with the volatile corrosion inhibitor may improve the old protective "cocoon" used to protect planes, guns and vessels from severe weather conditions. Researchers have developed a "shroud or "cloak" treated with the chemical which may be placed over aircraft engines and objects of similar size in one operation. To date, tests have produced satisfactory results.

Science News Letter, May 19, 1951

MEDICINE

Shield Some Organs to Aid Chance of Surviving A-Bomb

➤ CHANCES OF surviving the radiation from an atomic bomb are increased if some of the body's organs are shielded enough to keep their efficiency.

Experiments with the 184-inch cyclotron at the University of Chicago show this. The high energy beam of the cyclotron allows radiation of part of the body of a mouse while the rest of the body is not affected. Under the direction of Dr. John H. Lawrence, the beam is being used to irradiate the belly of a mouse, or its lungs or some of the glands, each organ being exposed to the beam while the rest of the body is protected.

The results, reported at the meeting of the Federation of American Societies for Experimental Biology, show that the reason for greater sensitivity when the whole body is irradiated is that all the organs are affected simultaneously.

Science News Letter, May 19, 1951

INVENTION

Alarm Clock Rings When Fire Danger Threatens

➤ SAFETY FROM fire for sleeping persons is provided with an electric clock which rings an alarm if the temperature of the bedroom reaches an unsafe degree. The "fire-alarm" part of the device does not interfere in any way with its normal operation as a timepiece. It utilizes, however, the same sound producer employed when the device acts as a simple alarm clock.

Operation as a fire-alarm depends upon the use of a material which changes from a solid to a fluid at a predetermined temperature above normal room temperature. Various wax compositions and metal alloys are suitable for the purpose. The temperature at which the fire alarm goes off depends upon the material used. Patent 2,552,331 was issued to Anthony H. Lamb, Hillside, N. J., for this invention.

Science News Letter, May 19, 1951

TECHNOLOGY

Artificial Sand Grains Make Lubricating Grease Smoother

➤ MICROSCOPIC BALL-BEARINGS to make your car run more smoothly were announced at the dedication of Du Pont's new research laboratory at Wilmington, Del.

Round particles which make lubricating grease smoother and slipperier have been made out of silica, which usually comes as sharp edged grains of sand. Du Pont chemists blend these tiny spheres with lubricants which ordinarily grow thin when machinery gets hot. Grease so treated stays put and does not leak out of the machine as temperature goes up.

The round, fine-grained form of silica was found by chemists trying to see how many kinds of things they could make out of sand. Although always underfoot, this material still holds surprises. The idea of putting it into lubricants came after it had been made and its smooth, slippery nature recognized.

Science News Letter, May 19, 1951

TECHNOLOGY

Oil Industry Developing Waste Disposal Methods

➤ OIL REFINERIES are right on the job of taking care of waste waters from their operations which would otherwise pollute the streams into which they dump. How the problem is being met was a principal subject of discussion at the meeting of the American Petroleum Institute in Tulsa, Okla. Successful methods were described.

Credit for the activities of the oil refineries in preventing water pollution does not belong entirely to them. Public authorities such as anti-pollution boards, fish and game commissions, harbor boards and others, have established stringent requirements regarding oil content, suspended-solids and other factors of pollution. However, the oil industry is cooperating in good spirit.

Disposal of industrial waste waters is constantly presenting more difficult problems, the Institute was told by Nicholas A. D'Arcy, Jr., Huntington Park, Calif. Properly designed and operated dissolved-air flotation clarification has been effective in removing free oil from waste water, he said. When colloid-forming chemicals are added, the combination has efficiently cleaned up industrial waste waters at many types of manufacturing plants.

The subject of gravity separation is of special importance in the petroleum industry, the meeting was told by Alfred C. Ingersoll of the California Institute of Technology. One of the undertakings of the American Petroleum Institute, he said, has been to keep abreast of developments in oil-water separation.

Science News Letter, May 19, 1951

NUTRITION

More Spice Than Ever

Except for pepper, more spice is being imported today than before the war. Mustard, sage and chili peppers are produced domestically in substantial quantities.

By MARTHA G. MORROW

➤ THE WORLD will still be as spicy as ever even if the present wars get hotter. Food here in the United States can still be seasoned tastefully despite hostilities.

There will be plenty of mustard, sage and ginger. Nutmeg, cloves and allspice will probably be in plentiful supply. America's spice industry, in fact, is most optimistic about the spice outlook.

Allspice is the only major spice grown exclusively in the Western Hemisphere, but increasing quantities of other spices are coming from the Americas. Cardamom is native to India, but a large proportion of our supply now comes from Guatemala. Much of our oregano, native to the Mediterranean area, is imported from Mexico and Chile. Some cloves are now coming from the Leeward and Windward Islands in the Caribbean Sea.

Yearly Production Increasing

More spices are being grown domestically than in past years. Almost enough mustard, the second most popular spice, can be produced in the West to meet our needs. Sage and chili pepper are grown domestically in increasing quantities. Coriander, dill, fennel, anise, paprika and rosemary are also grown in the United States, and could be produced in commercial quantities should prices rise high enough to justify their production.

But spices, which include most of the important flavoring materials used in army rations, processed foods and home cooking, are still largely imported by the United States. With the exception of pepper, more spice is being imported today than before the war.

Fortunately few spices are grown in Communist-dominated areas. Even where large supplies come from countries friendly to the U.S.S.R., other sources can be counted on to furnish them. The only such spice in short supply today is cassia, commonly called cinnamon in this country and preferred to true cinnamon because of its stronger flavor.

Third most popular spice, cassia is the dried bark of an evergreen tree of the laurel family. Much of our cassia comes from China, so this source of supply is drying up due to our limited war with that country. But cassia also is imported from Indo-China and Indonesia, and true cinnamon comes from Ceylon, so there is little danger of a real shortage.

Cassia is also now being grown in small quantities in the Western Hemisphere, particularly in Guatemala, Nicaragua and Ecuador. Higher prices, however, will probably have to be paid to stimulate additional production.

Pepper, which accounts for more than a fourth of the total tonnage of spices imported into the United States, has been scarce since World War II. During the Japanese occupation of the Indonesian islands—Sumatra produces more pepper than any other island in the world—the vines which bear the grape-like clusters of these small, spicy berries were devastated. Unsettled conditions on the islands have postponed replanting of these vines, which take seven years to bear pepper berries good for market.

Total pepper production since the start of World War II has dropped 71%. Higher prices have necessarily resulted, since buyers must bid against each other for scant supplies. Indonesia, which previously produced about 80% of the world's pepper, now supplies less than a fifth. Rehabilitation of the pepper vines, however, is under way. This past year pepper production in Indonesia was 10% of the pre-war level. Spice experts are hopeful that within a few years the supply will be more nearly normal.

Pepper for the entire world today is produced within 1,000 miles of the port of Singapore. Experiments in growing pepper in other parts of the world to date have proved unsatisfactory. But scientists still hope to bring the source of pepper nearer home in an effort to make this hemisphere a little more self-sufficient in seasoning sources. The U. S. Department of Agriculture is investigating the possibilities of commercial production of pepper in the Western Hemisphere. Ecuador and Nica-

GINGER FLOWERS—Although the ginger flowers are very fragrant, the plant is valued more for its roots. Ginger is one of the few spices that grow below the ground; the plant flourishes both in the tropics and semi-tropics. Suitable conditions are simulated at the U. S. Botanic Garden in Washington, D. C.

ragua among other countries look quite promising.

Other spices on the whole are coming from their normal source. Sage is still coming to us from the Dalmatian section of Yugoslavia, and some is grown in this country. Chili peppers are coming from South America, California and the Carolinas. Paprika, red spice from a mild-flavored pod pepper, has for several years been imported from Spain and Portugal rather than Hungary. Some also is grown commerically in California, the Carolinas and South America.

Two Spices from Same Fruit

Jamaica ginger, and Grenada nutmeg and mace have long been famous for their excellent quality. Vanilla is a native of Mexico, which remains an important source of this spice flavoring.

Spices are the roots, bark, stems, leaves, buds, seed and fruit of aromatic plants which grow in the tropics. Nutmeg and mace are the only two different spices harvested from the same fruit—nutmeg is the seed of a peach-like fruit while mace forms a sort of lacy pattern around its shell. Cloves, easily recognized by their characteristic nail-like shape, are the dried, unopened buds of an evergreen tree.

Ginger is one of the few spices that grow below ground. Dutch poppy seed is the only spice that is naturally blue. What we know as caraway seeds are actually fruits, the seed being very small and tightly enclosed in the fruit substance. Cardamom is one of the most expensive spices as it is much in demand and the yield is small, only about 250 pounds being harvested per acre.

Few people differentiate between spices, seeds and herbs, all used to make food taste better. Herbs are the aromatic leaves of plants which grow only in the temperate zone. Seeds refer to the seed, and sometimes the small fruit, of plants which grow in both the tropical and temperate zones—seeds like cardamom, celery and anise are also spices.

Spices Costly in Middle Ages

Although the price of some spices may rise within the next decade or so—and hoarding won't help as some spices soon lose their fresh flavor in prolonged storage—they will probably never again be as high as during the Middle Ages. In Medieval England a pound of ginger was worth more than a sheep.

The high cost of spices in the Middle Ages was largely due to the difficulties of transportation. Two years often elapsed from the time the spices were gathered until they reached their final destination. Duty or tribute had often been paid ten times on the same spice.

As a result, the spice trade stimulated exploration and colonization. The first rounding of the Cape of Good Hope, colonization of the East Indies and discovery of America all began with the search for spices.

The history of spice begins almost with the birth of civilization. A Chinese herbal dating back to 2,700 B.C. mentions cinnamon, and cinnamon is known to have been imported to Egypt as early as the 17th century B.C. Early Sanskrit writings and a papyrus dating from about 1,500 B.C. refer to coriander.

Nutmeg is reported to have been used as a fumigant to kill evil smells in the streets of ancient Rome. Pliny recommended fennel juice as an eyewash. And Alaric the Goth in 408 A.D. demanded not only gold and silver, but 3,000 pounds of pepper as part of the ransom of Rome.

The spice trade is the world's oldest continuous business, with spices, seeds and herbs having been used as medicines and perfumes as well as food adjuncts and preservatives. For centuries man has taken spices for granted; only recently has he begun to study them.

Spices Contain Vitamins

Research within the last decade or so has shown that spices, always used in very small quantities, do contain vitamins. Ounce for ounce, and gram for gram, paprika has been found richer in vitamin C than citrus fruits. Hot chili, a pod pepper, contains both vitamin A and vitamin C, and when used generously as in Mexican-type foods may be a good source of these essential vitamins.

Spices are recommended for patients on salt-free diets. Physicians who previously prescribed "bland" diets to patients suffering from ulcers now advise such sweet spices as cinnamon, nutmeg and mace because they pep-up the food. Spices will also help older people with flagging appetites to eat more.

You will continue to be able to pep-up your food, promise spice experts. With more spices than ever before coming from Latin America and a few being grown here in the United States, the future looks promising.

A number of interesting spices have been collected for you by SCIENCE SERVICE. *Poppy seed, ginger, nutmeg, cloves, cardamon and several other types of spices are included in the kit which you can secure for the nominal fee of 50 cents. Several spice recipes are listed as well as experiments you can perform with the spices included in the kit. Write* SCIENCE SERVICE, *1719 N St., N. W., Washington 6, D. C., and ask for the seasoning kit.*

Science News Letter, May 19, 1951

Deep *wells* drilled near Larderello, Italy, give a constant discharge of natural overheated steam that is used to operate electrical generators and to obtain chemicals including boric acid, borax and boron carbide.

Stimulating Books in the field of

Human Behavior

☐ **Bases of Human Behavior:**
A Biologic Approach to Psychiatry
by Leon J. Saul, M.D.
New, 1951. 150 Pages. $4.00

☐ **Emotional Maturity:**
The Development and Dynamics of Personality
by Leon J. Saul, M.D.
1st Edition, 1947. 339 Pages. $5.00

☐ **Principles and Practice of the Rorschach Personality Test**
by W. Mons, M.R.C.S., L.R.C.P.
2nd Edition, issued in America in 1951.
176 Pages. $4.00

☐ **Handbook of Psychiatry**
by Overholser and Richmond
1st Edition, 1947. 252 Pages. $4.00

☐ **Crime and the Mind**
by Walter Bromberg, M.D.
1st Edition, 1948. 219 Pages. $4.50

☐ **Saints, Sinners and Psychiatry**
by Camilla M. Anderson, M.D.
1st Edition, 1950. 206 Pages. $2.95

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ORNITHOLOGY

NATURE RAMBLINGS

Indigo Bunting

➤ IF YOU are walking along the edge of the woods, or across brushy pasture, and see a flash of blue winging through the air, look twice before you decide that it is a bluebird. It may be that somewhat less abundant but equally beautiful bird, the indigo bunting.

There is no danger of confusing the two birds, if you can get a fair look at the indigo bunting. The indigo bunting has no red underneath, as the bluebird has, but is blue on both breast and back. The only feathers he has that are not blue are the large dark ones of his wings and tail, and even these are blue edged. This is his summer garb; in winter, he has a general sparrow-like appearance.

His mate keeps her sleek but inconspicuous brown dress the year round. She has not a single distinctive feature to allow instant identification, and in coloring she most resembles a plain little brown striped sparrow.

The song of the indigo bunting is a beautiful, sustained trill, not unlike that of a canary. Indeed, one of the less familiar names for this bird is blue canary. The bunting is very fond of singing, too, and will frequently stage a recital in midsummer, long after most other birds have become silent.

The persistence of his sweet, simple song when other birds are quietly seeking relief from the heat is one of the surprises of this bird. Many and many a highway can be traversed in the heat of day without hearing one bird utter even a short note, except the indigo bunting.

Indigo buntings are not as well known, perhaps, as bluebirds, even though they are often mistaken for them. This is because they are rather more shy of humankind and prefer to live in the tangled thickets and broken woodlands, remote from habitations. But for the nature lover they are worth patient seeking, for they have few peers and no superiors in beauty among our native birds. There is a jewel-like brightness about their deep blue feathers that surpasses the bluebird's blue.

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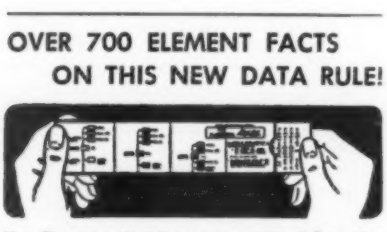
OVER 700 ELEMENT FACTS ON THIS NEW DATA RULE!



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The Slyd-Rul Co., Canaan, N. Y.

INVENTION

Now No Kindling Required To Light Fire in Furnace

➤NO KINDLING is required to light the coal fire in a furnace with an electric igniter which earned for William D. Hall, Elkins, W. Va., patent 2,549,806. All that is necessary is to push the spear-shaped head of the device into the center of the coal bed and turn on the electricity.

This penetrating head, on the end of a pipe, is made of a ceramic material, and within it is an electric coil. After the coal is sufficiently heated by the electric coil, a stream of air from a blower is sent through the pipe to build up the flame resulting from the heater.

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TECHNOLOGY

Clean Coal by Airflow

➤ CLEANING COAL as it comes from the mines by airflow instead of water gives a product with several advantages, the American Mining Congress meeting in Cleveland was told by W. C. McCulloch, Roberts and Schaefer Company, Chicago. In the process the airflow equipment separates dust and refuse from the coal by air from a blower.

The operating principle of the airflow can be described in a few words, he said. The coal and refuse particles entering at the upper or feed end are stratified by means of pulsating air. After the layer of refuse is formed it travels forward into pockets from which it is withdrawn. The upper layer of coal continues to travel over the slowly moving bed of refuse and is removed at the opposite end. Dust created by the pulsating air is sucked into an overhead hood and is recovered in a filter or cycle dust collector.

Air cleaned coal has many advantages over wet-washed coal, he stated. It does not freeze in shipments in cold weather. In wet weather in open cars, it sheds the rain and arrives at its destination with only its surface wet. Important also, it is more amenable to oil treatment for holding down the dust.

Successful methods of preventing stream and air pollution from the discharge of waste water and gas from mechanical coal-cleaning plants were discussed by F. P. Calhoun, Rochester and Pittsburgh Coal Company, Indiana, Pa. Marketable coal from waste water can be recovered by settling tanks, screens, thickeners and filters, he said.

The tiny particles called "superfines" present a special problem, he indicated. It is these superfines that make streams black or gray. The only way they can be removed is by thickening followed by filtration or evaporation, he stated.

The recovery of dust from fine coal drying plants is a much greater problem, he declared. This fine dust is suspended in the discharge gas. Tests conducted on wet gas scrubbers show it is possible to remove up to 98% of the solids by this method. Electric precipitators to remove the dust are considered rather dangerous due to possible short circuits in the presence of dense coal dust accumulations.

Science News Letter, May 19, 1951

CHEMISTRY

Measure Oxygen in Oil That Causes Deterioration

➤ THE PREVENTION of the formation of undesirable substances in oil, gasoline and other petroleum products by air or oxygen in any form was a subject of discussion at the meeting of the American Petroleum Institute, Tulsa, Okla.

Hydrocarbons, like all other materials, are altered to a certain extent by the atmosphere, and oil companies for years have been carrying out research to find means of retarding the combination of petroleum products with oxygen, it was stated by Morris Dundy and Ervin Stehr of the Texas Company, Beacon, N. Y.

In order to evaluate the results of such investigations, satisfactory means of measuring the extent of oxidation are required, they said. They described a new method in which analysis is effected by heating a sample of the product at elevated temperatures in a quartz tube containing carbon black and an inert gas, under which conditions the oxygenated material is converted to carbon monoxide.

This carbon monoxide is converted to carbon dioxide which can be absorbed by reagents and weighed. From carbon dioxide weight, the percentage of oxygen in the sample can be calculated.

Science News Letter, May 19, 1951

PUBLIC HEALTH

Warn of Germ Warfare

► SCHOOL AND office absentee records may well be where we will find out if an enemy has attacked with biological warfare. Public health officers from 30 states have wound up meetings in which this method of getting a quick check on the start of an epidemic was discussed.

The 161 participants met with representatives of the U. S. Public Health Service, the National Institutes of Health and the Civil Defense Administration at the government's Communicable Disease Center, Atlanta, Ga.

Quicker and more accurate methods of reporting both natural and man-made epidemics to those who have to control them will be recommended to the October meeting of the state public health officers' association. It is suggested that they go into effect at the beginning of next year.

Reports from schools, offices and factories as to rises in the usual absentee rate will enable public health officers to estimate the speed and extent of influenza and other epidemics. Control measures may then be taken.

It is believed that any disease used in biological warfare would not be a self-perpetuating type but would strike a lot of people suddenly. This method of reporting on the statistics of epidemics would make the extent of a BW attack known to the government in the quickest way possible.

"These new methods are necessary, not only for peacetime, but also for defense in wartime," said Dr. Alexander Langmuir, chief epidemiologist of the Communicable Disease Center.

Science News Letter, May 19, 1951

MEDICINE

Airborne Disease Persists

► YOU ARE more likely to be infected if you are exposed to influenza virus if it is airborne than when the agents are in a liquid.

The influenza virus survives best in climates at about 60% relative humidity, which is within the normal range of most American cities.

When viruses attached to particles a hundred-millionth of an inch in diameter get into your body, they are likely to infect you whether the agent itself is very virulent or not.

But if the particles are larger than this, your body most likely will repel them, even though the agents are highly virulent.

These are some of the findings of research being carried on at the University of California with experimental tools which make it possible to study epidemics under controlled laboratory conditions.

These tools, developed during the last war in America's studies of defenses against bacteriological warfare, have been greatly improved since 1945. The work is being done by Naval Medical Research Unit No. 1, under a contract the University has with the Office of Naval Research. Director is Dr. A. P. Krueger, professor of bacteriology.

Despite a vast amount of research, most of man's information on epidemics is based on theories derived from qualitative rather than quantitative information.

With the present equipment, devoted primarily to airborne infection studies, it is possible not only to infect animals but to know just how many disease agents pass by an animal's nose in a germ cloud. Infection is achieved through an atomizer, which acts something like a hearty human sneeze; and the droplets it sprays can be varied in size. Instruments monitor the cloud to make sure conditions remain the same.

Treatment can be given to animals on whose exposure precise data are available; and thus varied treatments on varied exposures can be evaluated.

The research team includes Drs. W. R. Leiff, I. L. Schechmeister, and L. J. Goldberg.

Science News Letter, May 19, 1951

PSYCHIATRY

Use Term "Mental Disorder" Instead of "Psychoneurosis"

► IF ONE of the nation's leading psychiatrists has his way, there won't be any more "neurosis," "psychosis," or "psychoneurosis."

No, he does not have a magic cure for mental illness. He simply wants to eliminate these words, which have become pretty much a part of household language, because he feels they have lost all meaning.

Instead, Dr. Karl Bowman, of the Langley Porter Clinic at the University of California School of Medicine, recommends the term "mental disorder" to classify all mental illnesses. Each of the three classes of mental disorder would be designated as to severity by the terms "mild," "moderate," or "severe."

Dr. Bowman, who addressed the American Psychiatric Association meeting in Cincinnati, said that these designations would bring some order out of the confusion now surrounding definitions of mental conditions. The meaning of these classifications would be clear to all psychiatrists, he stated.

He added that "neurosis," "psychosis," and "psychoneurosis" have no scientific basis and that psychiatrists cannot agree among themselves as to what they mean.

Dr. Bowman commended a committee which has effected the elimination of the terms "mental deficiency" and "psychopathic personality" from a new issue of the STANDARD NOMENCLATURE OF DISEASES which will be published shortly. He said there is even more reason for eliminating "neurosis," "psychosis," and "psychoneurosis."

Science News Letter, May 19, 1951

MEDICINE

Hayfeverites Offered Long Lasting Antihistamine

► HAYFEVERITES this summer are offered a new antihistamine drug which is claimed to be better on two counts than others previously tried: 1. unusually long lasting effects, and 2. very low toxicity, or undesirable side effects.

A single dose keeps on relieving hay fever or hives for an average period of 19½ hours, Dr. W. A. Bain of England has reported. The drug makes about one out of five persons drowsy, but this becomes an advantage if the single dose for the 24 hours is taken at bedtime, since the drowsiness wears off before morning but the antihistamine effect lasts for a considerable part of the day.

The drug is a phenothiazine chemical. It is called Phenergan Hydrochloride by its manufacturers, Wyeth Incorporated of Philadelphia.

Science News Letter, May 19, 1951

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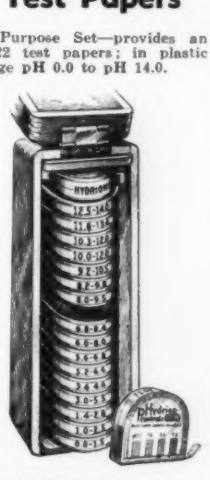

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BASIC ORGANIC CHEMISTRY—J. Rae Schwenck and Raymond M. Martin—*Blakiston,* 323 p., illus., $4.50. A one-semester text for students majoring in other fields.

BRIEF COURSE IN ANALYTICS—M. A. Hill, Jr., and J. B. Linker—*Holt,* rev. ed., 224 p., $2.40. Intended to develop the student's powers of reasoning and help him to "think in the language" of mathematics.

CLIMATE IN EVERYDAY LIFE—C. E. P. Brooks—*Philosophical Library,* 314 p., illus., $4.75. How to make the best of whatever climate we may have to live with, by selecting the most favorable sites for factory and home, by creating artificial indoor climates and by other means.

COLLEGE ALGEBRA—Henry L. Rietz and Arthur R. Crathorne—*Holt,* 5th ed. rev. by J. William Peters, 387 p., $2.95. A text for freshmen in college or for technical schools.

CONFERENCE ON PROBLEMS OF AGING—Nathan W. Shock, Ed.—*Josiah Macy, Jr. Foundation,* 215 p., $3.50. Contributions by experts from many fields.

CRITICAL FACTORS IN MANAGEMENT PLANNING—*American Management Association,* 32 p., paper, $1.25. Contains a section on A-bomb protection in industry.

DISTRIBUTION OF THE VARIETIES AND CLASSES OF WHEAT IN THE UNITED STATES IN 1949—J. Allen Clark and B. B. Bayles—*Govt. Printing Office,* USDA Circular 861, 71 p., illus., paper, 25 cents.

ELEMENTARY PARTICLES—Enrico Fermi—*Yale University Press,* 110 p., $2.50. Material presented in the Silliman Lectures at Yale University in April, 1950, for the general public and physics students.

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FAMILY CENTERED MATERNITY AND INFANT CARE—Edith B. Jackson and Genevieve Trainham, Eds.—*Josiah Macy, Jr. Foundation,* 29 p., paper, 25 cents. Report of the Committee on Rooming-In.

FUNDAMENTALS OF ELECTRICAL ENGINEERING—Fred H. Pumphrey—*Prentice-Hall,* 668 p., illus., $7.65. A text for students specializing in other fields.

GOOD LAND FROM POOR SOIL—Edward Ringwood Hewitt—*Trenton Printing Co.,* 137 p., paper, $1.50. A chemist with experience as a farmer tells other farmers how to keep their land in good condition.

THE GROWTH OF SCIENTIFIC IDEAS—William P. D. Wightman—*Yale University Press,* 495 p., illus., $5.00. The history of science from the approach of searching out the origin of certain basic ideas or concepts. A readable book.

ILLUSTRATED MATHEMATICAL POST CARDS—*Scripta Mathematica,* 30 cards, $1.50, or 5 cents each. Ten portraits of famous mathematicians and twenty geometrical designs designed to aid mathematics teachers to make the subject more palatable.

INVENTORIES OF APPARATUS AND MATERIALS FOR TEACHING SCIENCE: Volume III, Technical Colleges, Part II Physics and Chemical Engineering—*UNESCO (Columbia Univ. Press),* 116 p., paper, $1.50. Another in UNESCO's series intended to aid in the teaching of science.

MANPOWER RESOURCES FOR THE EMERGENCY—*American Management Association,* 44 p., paper, $1.25. Includes a section on national mobilization policy.

MUSEUM PICTORIAL, NUMBER 1, *Denver Museum of Natural History,* 62 p., illus., four or more times a year, $1.50. A magnificently illustrated publication printed by offset, each issue devoted to a single topic. The first is on Nature Photography with Miniature Cameras.

PHARMACEUTICAL BOTANY—Heber W. Youngken—*Blakiston,* 7th ed., 752 p., illus., $7.00. For students and pharmacists.

PHARMACOGNOSY: The Study of Natural Drug Substances and Certain Allied Products—Robertson Pratt and Heber W. Youngken, Jr.—*Lippincott,* 644 p., illus., $8.50. A textbook with emphasis on the chemical, physical, and physiologic principles involved in the production and application of plant and animal drugs.

PLANT LAYOUT: Developing and Improving Manufacturing Plants—John A. Shubin, and Huxley Madeheim—*Prentice-Hall,* 433 p., illus., $7.35. Covers the principles, techniques and procedures connected with the selection and layout of plant facilities.

PRINCIPLES OF GENERAL CHEMISTRY—Stuart R. Brinkley—*Macmillan,* 4th ed., 703 p., illus., $5.00. A college text revised to have greatly expanded treatment of atomic structure.

PRINCIPLES AND METHODS OF SHEET-METAL FABRICATING—George Sachs—*Reinhold,* 526 p., illus., $10.00. For sheet-metal workers, especially in aircraft factories.

PROBLEMS OF INFANCY AND CHILDHOOD—Milton J. E. Senn—*Josiah Macy, Jr. Foundation,* 181 p., $2.50. Transactions of the fourth conference.

STRUCTURAL GEOLOGY OF NORTH AMERICA—A. J. Eardley—*Harper,* 624 p., illus., $12.50. Describing the structural evolution of the North American continent and chronicling its crustal unrest.

SYMPOSIUM ON THE HEALTHY PERSONALITY—Milton J. E. Senn, Ed.—*Josiah Macy, Jr. Foundation,* 298 p., $2.50. Transactions of special meetings of conference on infancy and childhood.

VACUUM-TUBE VOLTMETERS—John F. Rider—*Rider,* 2d ed., 422 p., illus., $4.50. A revised edition of a textbook for those already familiar with the vacuum tube.

WORKBOOK AND LABORATORY MANUAL TO ACCOMPANY HIGH SCHOOL PHYSICS WITH TESTS—Oswald H. Blackwood, Wilmer B. Herron, and William C. Kelly—*Ginn,* 277 p., illus., paper, $1.40. May accompany any standard high school text but intended especially for the authors' "High School Physics".

Science News Letter, May 19, 1951

INVENTION

Glow Plug Heating Makes Diesel Engine Starting Easy

► THE DIFFICULT job of starting a diesel engine in cold weather is eased by an improved starter system which was awarded a patent by the government.

Cold diesels in outdoor equipment absorb a great amount of heat from the compression gases before the temperature in the combustion chamber is high enough to cause ignition. This makes starting difficult.

This invention, like commonly used diesel starters, utilizes glow plugs in the engine block that extend into the combustion chamber, the plugs being heated electrically. The plugs must be energized enough to cause effective ignition, and kept energized after firing until the engine is operating properly. The feature of this invention is a control system that keeps the starter itself from beginning to operate until the glow plugs have created a proper temperature, and then keeps the plugs glowing until the engine is running smoothly.

The inventor is Gustave D. Cerf, Livingston, N. J. Patent 2,552,256 was awarded to him. Rights have been assigned to Thomas A. Edison, Inc., West Orange, N. J.

Science News Letter, May 19, 1951

PSYCHIATRY

Mental Recovery Aided

➤ LEARNING TO hold people at the right distance, getting neither too far away nor too close emotionally, plays an important part in the recovery of some mentally sick persons, Dr. Milton Wexler of the Menninger Foundation, Topeka, Kans., told members of the American Psychiatric Association meeting in Cincinnati.

He illustrated his idea by telling of a patient suffering from schizophrenia, sometimes popularly called split personality, who grew terribly frightened when anyone showed interest in her. She fought angrily to keep all people at a distance.

"The more kindly she was treated, the more frightened and angry she became," Dr. Wexler said. "She assaulted her therapist (doctor) and the whole world around her partly as an effort to prevent anyone from getting close to her and partly because her rage was the only means of making contact with objects around her."

A blunt, direct, demanding approach was then tried. This allowed her gradually to develop an attachment to her doctor which was secure enough so that she could give up her defensive hatred and establish a relationship on a more secure footing of affection and understanding.

Schizophrenic patients, Dr. Wexler said in summary, are like the porcupines in Schopenhauer's famous story. They were freezing on a cold winter's day. At first they crowded so close together that their quills produced intolerable pain. When they separated, they nearly froze and were driven back close together again.

"So," Dr. Wexler concluded, "they moved backwards and forwards until they finally found a mean distance at which they could most tolerably exist."

Science News Letter, May 19, 1951

TECHNOLOGY

High-Heat-Resisting Paint

➤ PAINT THAT failed to burn when test panels were brought to a dull red heat of about 1300 degrees Fahrenheit has been demonstrated by the Du Pont Company, Wilmington, Del. In final form on the wall it is a combination of titanium dioxide and aluminum.

The paint is still in an experimental stage. There are many problems to be solved such as getting it to adhere satisfactorily to metal and attaining resistance to salt-water attack. But there is no question relative to its ability to resist heat. Coatings, for example, failed to burn when heated to a temperature of 650 degrees Fahrenheit for an hour.

Manufacture of the paint starts with a chemical compound known as titanium tetrachloride, similar in structure to the well-known cleaning fluid and fire extinguisher, carbon tetrachloride. This titanium compound is reacted with isopropyl alcohol to form a compound known as tetraisopropyl titanate. This is used with aluminum flake in making the paint.

When the paint is applied, the titanate compound reacts with the moisture in the air, forming titanium oxide, and an alcohol that evaporates off. This leaves a film of titanium oxide and aluminum on the painted surface.

An expected application for this new paint is on shipping to protect interior walls and lessen fire hazards. Paints now commonly used on ships' interiors are fire resistant to a degree, but not enough so to give complete protection. Once wall temperatures are raised to the paint's combustion point, fire is apt to spread from one steel compartment to another. It is expected that the new paint will give higher protection than those in use.

Science News Letter, May 19, 1951

METALLURGY

Coating for Ceramals May Give Better Turbine Blades

➤ BETTER TURBINE blades, able to resist high temperatures developed in gas turbine and turbojet engines, may result from work at the National Bureau of Standards with high-chromium ceramic-metal coating over titanium-carbide materials.

A report on the work has just been issued by the National Advisory Committee for Aeronautics. The investigation has demonstrated, the report states, the feasibility of protecting a cobalt-bonded titanium-carbide ceramal against oxidation by the application of a ceramic-metal coating having a high content of chromium powder.

At a blade temperature of 1,800 degrees Fahrenheit, the report continues, this coating would probably greatly prolong the life of this ceramal blade under operating conditions sufficiently severe to accelerate failure of the uncoated blade by oxidation.

Ceramal is a relatively new term applied to materials consisting of a combination of ceramic and metallic ingredients. All carbides are considered ceramals. The material used, protected by the new coating, contained 80% titanium carbide and 20% cobalt. The coating contained 80% by weight of chromium powder and 20% frit, a melted ceramic glaze. After the glaze was applied, either by dipping or by spray, the coating was bonded to the ceramal by firing at 2,200 degrees Fahrenheit for ten minutes in an atmosphere of high-purity hydrogen.

High-temperature alloys in current use for gas-turbine blades give reasonably good service in the temperature range from 1,500 to 1,550 degrees, but not at temperatures higher than this.

Science News Letter, May 19, 1951

AGRICULTURE

More Castor Oil Coming But Not for Small Boys

➤ ABOUT TEN times more castor bean oil will be processed from California crops in 1951 than in 1950.

But America's small boys need not worry —very little of it will be used for medicinal purposes, says Dr. P. F. Knowles of the agronomy division of the University of California Agricultural Experiment Station, Davis, Calif.

Most of the product will go into paints and varnishes, hydraulic fluids, lubricants, and textile oils. Nearly 200 other uses of castor bean oil are assuming some commercial importance.

The great increase in production is mainly due to a world shortage of castor bean seed. The oil is also a partial substitute for tung oil, which is becoming increasingly scarce.

Even so, the castor bean crop in California, for example, is limited to 20,500 acres because only enough seed to plant this acreage is available. All of this is grown under contract with an oil seed processor.

A minimum price of 10 cents a pound is guaranteed by the Commodity Credit Corporation.

Science News Letter, May 19, 1951

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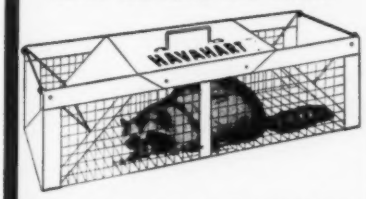

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LIGHTED "YO-YO," the twirling spool-like toy on the end of a string, is made of a translucent plastic and has within it a tiny battery and electric bulb. It is claimed to give weird effects in darkness, operated by amateurs or experts.

Science News Letter, May 19, 1951

FRANKFURTER CORER, recently patented, includes a tube to hold the skin-covered meat roll and a cutting tube to make a hole lengthwise through its center. The hole is for the insertion of relishes to make a "daintier" hot-dog sandwich.

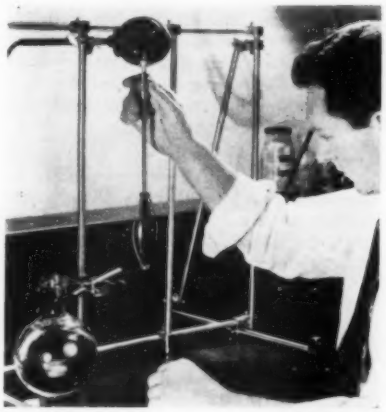
Science News Letter, May 19, 1951

LIFE BUOY, to keep persons afloat in water, is ring-shaped and the usual size but is made of an expanded plastic, the material being honeycombed with millions of tiny non-connected cells which make it extremely light. It is unaffected by sun or salt water.

Science News Letter, May 19, 1951

WASHBASIN, for the automobile, is fixed under the front seat, with a hinged portion of the seat for a cover. Water for use in this recently patented device is carried in a tank behind and above the rear seat, with a pipe leading to the basin. Draining outlet to the basin is provided.

Science News Letter, May 19, 1951



STIRRER, for use in narrow-necked flasks or bottles in the laboratory or kitchen, as shown in the picture, has four blades that can be closed while passing through the neck and then opened to egg-beater size and shape for maximum stirring effectiveness. Its 12-inch shaft fits chucks of ordinary laboratory motors.

Science News Letter, May 19, 1951

CLOTHESLINE PUMP, without pipes or bucket, is an endless rope passing rapidly over a pulley above the water and one submerged. Water sticking to the up-bound rope is thrown off at the top. This old idea, now revived, is used in a two-rope pump, with a quarter-horsepower motor, that raises 12 gallons per minute from a 25-foot depth.

Science News Letter, May 19, 1951

HYDROFIN is a coined name for a speedy water craft with a hull carried well over the tops of small waves at reasonable speeds, and small water wings under the surface. Propeller blades similar to those on aircraft provide forward movement, and steering facilities are provided.

Science News Letter, May 19, 1951

OPTICAL KIT has been developed for the armed services for repair of broken spectacles in advanced areas. Each unit consists of two table-high small cabinets that contain frames, lenses, and small tools, and also a hand-operated lens cutter and a grinding wheel.

Science News Letter, May 19, 1951

Do You Know?

A mature *goose* can furnish about a pound of feathers in a year if plucked every six weeks during the spring, summer and early fall.

For its weight, the familiar *web* of the spider is said to be stronger than steel.

The earliest meat animal domesticated by ancient people in what is now Iran probably was the *goat*.

"Apple slaw" is as mixture of finely chopped apples and finely-shredded cabbage in a sour cream dressing.

Peach tree *borers* feed on the cambrian or inner layer of the bark of the tree, often girdling young trees and causing their death.

Reclamation of *alkali* land in Greece during the past two years is making land for rice-growing available; pumps remove alkaline water from the rice fields and replace it with fresh water.

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